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Executive Registry

65- 4553/1

18 November 1985

NOTE FOR: [redacted]
Executive Secretary

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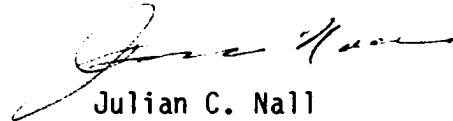
FROM: Julian C. Nall
NIO/S&T

SUBJECT: Proposed US/USSR Cooperative Program on Magnetically Confined
Fusion

REFERENCE: My Memorandum to you on the Same Subject, dated 15 November 1985

The chronology of events on the subject since my referenced memorandum are as follows:

- Very late on 15 November, I received the attached "Fact Sheet" and talking points for the President which had been somewhat revised. (Tab A)
- Early morning on 18 November, I received a "Summary of Points" on the subject and another revision of the talking points for the President. (Tab B). These two papers were reviewed by NED and TTAC of OSWR, and me and we all concurred.
- At 1330, I placed calls to both Don Fortier and Lou Pugliaresi to state that we concur with the new document. At 1530 neither call had been returned so I placed a second call to Don Fortier and left a message that we concur. A second call to Lou Pugliaresi was completed and I told him of our concurrence.


Julian C. Nall

Attachments
As stated

cc: C/NIC
VC/NIC
Acting D/OSWR
C/TTAC
C/EMB/SRD/OGI [redacted]
NED/OSWR [redacted]

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17	NIO/S&T	X			
18	D/OSWR		X		
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SUSPENSE		18 NOV 85 Date			

Remarks

TO #17: Please take lead in reviewing this and providing coordinated comments to Don Fortier.

Advance copy provided to NIO/S&T.

Executive Secretary

15 NOV 85

Date

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**GENEVA TALKING POINTS FOR THE PRESIDENT
ON
FUSION REACTOR PROPOSAL**

- AS SECRETARY SHULTZ TOLD YOU IN MOSCOW, I THINK YOUR PROPOSAL THAT OUR TWO COUNTRIES WORK WITH JAPAN, EASTERN AND WESTERN EUROPE, CHINA, AND OTHER COUNTRIES TO BUILD FUSION REACTOR HAS MERIT.
- FUSION HAS POTENTIAL AS AN INEXHAUSTIBLE SOURCE OF ENERGY, AND IT IS FOR BENEFIT OF ALL MANKIND THAT WE BEGIN PREPARING FOR WORLD'S ENERGY NEEDS FOR THE NEXT CENTURY.
- JAPAN, WESTERN EUROPE, YOURSELVES AND OURSELVES ALL HAVE ROUGHLY COMPARABLE FUSION DEVELOPMENT PROJECTS. COMBINING RESOURCES AND EXPERTISE OF TECHNOLOGICALLY ADVANCED COUNTRIES SEEMS A PRACTICAL AND TIMELY STEP.
- WE SHOULD BEGIN NOW A PROCESS FOR EXPLORING WAYS WE MIGHT COMBINE SOME OF OUR SEPARATE EFFORT IN FUSION RESEARCH INTO A PROGRAM OF INTERNATIONAL COLLABORATION LEADING TO THE POSSIBILITY OF DESIGN AND CONSTRUCTION OF AN ADVANCED MAGNETIC FUSION REACTOR.
- HOWEVER, WE MUST NOT OVERLOOK PROBLEMS AND DIFFICULTIES IN SUCCESSFULLY IMPLEMENTING SUCH A LARGE, LONG TERM, AND EXPENSIVE RESEARCH EFFORT.
 - CONTRIBUTIONS AND BENEFITS MUST BE CAREFULLY BALANCED.
 - PROJECT ORGANIZATION MUST BE LEAN, EFFICIENT, AND NONPOLITICAL.
 - MANY DETAILS AND EVENTUAL MULTILATERAL AGREEMENT MUST YET BE WORKED OUT.

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November 15, 1983: 2:30pm

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FACT SHEET

Multilateral Fusion Research Proposal

Overview

- The successful development of a fusion nuclear reactor would provide the world with a clean technology that could produce an inexhaustable energy supply. Fusion energy offers the potential for cost savings in energy production. However, the construction of commercially available reactors will require that capital and operating costs be competitive with alternative sources. For technical and cost reasons, fusion reactors may not be available commercially until well into the 21st century.
- A large multilateral effort on fusion research offers a cost-effective approach for accelerating the pace of development of an important long-run energy source. Successful commercial implementation of fusion energy will eliminate our vulnerability to insecure and expensive imports of petroleum and other fossil fuels. In addition, this collaborative program will permit us to make determinations of the commercial feasibility of fusion power much earlier than would otherwise be the case.
- The Soviets have proposed that the U.S. and the U.S.S.R. head a multilateral organization to design, build, and operate the next generation experimental magnetically confined fusion reactor. The Soviets have asked that countries from Western and Eastern Europe as well as Japan and China be invited to participate and contribute to the project. The project will permit cost-sharing in building the next generation experimental reactor and the Soviets would be obliged to make a fair contribution of equipment, technology, personnel and hard currency.

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- There is a broad agreement in the world fusion community that the next step is to build an engineering test facility (prototype fusion reactor). The estimated cost of such a facility is too large to be easily borne by any one country. To exclude the Soviet Union from international cooperation in the next step would be to deprive ourselves from some of the most advanced fusion research expertise in the world.
- The U.S. currently has a cooperative agreement with the Soviet Union in fusion under which teams of scientists undertake various agreed projects. It is the opinion of the U.S. fusion scientists that these exchanges have been completely open on the part of the Soviets and the Soviets have made no attempt to restrict the access of U.S. participants. In addition, the proposal would build on existing exchanges between the U.S. and U.S.S.R. that have been of benefit to both countries even in periods of political stress.
- The USG now spends \$385 million on magnetic fusion research. We have a small cooperative effort (less than \$4 million) with the Soviets in scientific exchanges on fusion research.
- Depending upon the degree of participation among the major industrial countries engaged in fusion research the U.S. contribution would be between \$60 to \$150 million per annum. The entire project will cost roughly \$3 billion and take ten years to complete. Although other countries might be interested in sharing the burden associated with fusion research, we can expect caution given U.S. requests for SDI and our historical difficulties in staying with long-run commitments for cooperative energy R&D. Maximum technical and financial resource benefits can only be achieved with the full participation of allied magnetic fusion projects.
- From the budget side, two points should be noted. First, USG's fusion program has decreased by 10 percent per year over the last two years. It remains, however, the second largest program in energy research. Until now neither the Administration nor Congress has considered this program to have a sense of urgency. Second, to remain within budget objectives, any increase for this project would have

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to be offset by decreases in other aspects of domestic fusion research.

- Proceeding with the Soviet fusion proposal might harm our efforts to gain political and budgetary support for SDI because of the following: (1) Support for SDI is fragile and a major Soviet critic of SDI (Ye. P. Velikhov) as well as other critics might point to fusion research as a peaceful alternative to SDI. Velikhov is the primary proponent of the Soviet fusion program. (2) The Soviets might use our support for fusion research to further polarize the U.S. scientific community on SDI and bleed away Congressional support for SDI funding.

Technology Transfer and National Security Concerns

- The Soviets will have access to a broad spectrum of high caliber U.S. and other Western scientists and engineers at a level not now available to them. The risk from elbow-to-elbow contact, particularly in the joint production of engineering design, could contribute to Soviet efforts to identify and acquire technical knowledge and specifications of allied COCOM controlled technology.
- U.S. and allied participation in the project would have to be governed by COCOM regulations and in particular the "no exceptions" policy regarding the transfer of controlled technology to the Soviet Union. This policy has been strictly adhered to by the U.S. and the allies over the last five years. It should be noted that the net effect of adhering to the COCOM export control regime would likely be to deny the project the most recent and effective Western technologies and components in such key areas as computers, software, and diagnostic equipment.
- If it were necessary to rely on a wide range of inferior technologies to construct the reactor, the project could be delayed and/or realize poor research results. As a result, we could expect pressure from the scientific community or allied governments to seek exceptions to the COCOM export control regime. Permitting exceptions would place the U.S. in a difficult position because it was our initiative as a result of the Soviet invasion of Afghanistan to get the allies to adhere to a "no exceptions" policy on the transfer of controlled technology to the Soviet bloc.

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- In addition to COCOM regulations, we would be unable to permit Soviet Bloc access to any supercomputers located in the West even if they are required for the project. Such access would violate our recently approved confidential agreement with Japan and Germany to attach safeguards governing the sale of and access to supercomputers by the Soviet Bloc. These restrictions might harm the pace at which the project would proceed.
- Many technologies must be brought together and more fully developed to successfully complete the project. Some of these developments also are required to convert current advanced weapons concepts into usable hardware. For example, some breakthroughs in fusion research might be applicable to particle beam weapon development and a host of SDI applications. This project inadvertantly could assist the Soviet in their Strategic Defense Technology program. It's possible, however, that we might advance our own SDI program from this effort. (Attached is a list of fusion technologies required to advance the development of our SDI weapons system.)

Other Issues

- Should we have a major political fallout with the Soviets sometime during the life of the project the USG might be forced to pull out of the project. Any gains from cooperative research might then be reduced.
- The USG might be subject to severe criticism from portions of the scientific community that has supported Administration efforts to hold down spending on fusion research. Addressing these criticisms suggest that the project might only be justified if it were funded out of existing budgetary levels.
- Given that hundreds of Western and Soviet physicists will participate in this project we may send the wrong signal to the Soviet scientific community that we have returned to business as usual. As recently as Nov. 8, 250 U.S. physicists asked the Soviets to release a number of Soviet fusion scientists.

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SUSPENSE		1600: 18 NOV 85 Date			

Remarks

TO #17: Please note attached revised talking points in Fusion Research. Should be added to package you received late Friday for review/comment -- due Monday.

Executive Secretary

16 NOV 85

Date

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ON

SOVIET FUSION RESEARCH**PROPOSAL****MERITS OF FUSION POWER**

There is general inter-agency agreement that further research on magnetic fusion power has merit. Fusion energy offers the potential for an inexhaustible supply of energy, though not until well into the 21st century.

FUSION RESEARCH IS EXPENSIVE/NEED FOR COST SHARING

There is broad agreement in the world fusion community that the next step is to build an engineering test facility. The cost of a new facility is too large to be easily borne by one country, so cost-sharing represents an effective approach for combining the world's advanced fusion programs to push the technology forward.

TECHNOLOGY TRANSFER CONCERNS

There is inter-agency agreement that cooperative fusion research with the Soviets should not result in the transfer of COCOM controlled technology to the Soviet Union. U.S. and allied participation in the program would have to be governed by strict adherence to COCOM with no exceptions. The "no exceptions" policy is important to sustain the credibility of our current cooperative regime with the allies on export controls.

TECHNOLOGY TRANSFER CONTROLS MAY SLOW THE PACE OF RESEARCH

Our technology transfer controls may affect the pace of research on fusion power with the Soviets. As a result, we are not yet sure a cooperative program can successfully construct an optional advanced reactor.

ALLIED PARTICIPATION ESSENTIAL

There is also agreement that full allied participation is essential to keep the budget for fusion research program under control. A joint U.S./USSR program without allied participation would be unworkable.

COMMITMENT TO A PROCESS, NOT A PROJECT

Given the uncertainties that need to be addressed regarding the transfer of technologies, allied participation, and the need for cost-sharing, it is essential we commit only to a process of cooperative fusion research and not a project at this time.

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**GENEVA TALKING POINTS FOR THE PRESIDENT
ON
FUSION PROPOSAL
RESEARCH**

- AS SECRETARY SHULTZ TOLD YOU IN MOSCOW, I THINK YOUR PROPOSAL THAT OUR TWO COUNTRIES JOIN WITH OTHER ADVANCED PARTNERS TO INCREASE COOPERATION IN MAGNETIC FUSION RESEARCH HAS SOME MERIT.
- THERE IS MUCH WORK THAT STILL NEEDS TO BE DONE TO SOLVE THE SCIENTIFIC QUESTIONS THAT COULD ENABLE US TO DEVELOP FUSION AS AN INEXHAUSTIBLE SOURCE OF FUTURE ENERGY.
- JAPAN, WESTERN EUROPE, THE SOVIET UNION AND THE U.S. ALL HAVE ROUGHLY COMPARABLE FUSION DEVELOPMENT PROJECTS. WE OUGHT TO EXPLORE THE POSSIBILITY OF COMBINING RESOURCES AND EXPERTISE MORE SYSTEMATICALLY.
- WE BELIEVE WE SHOULD ANNOUNCE OUR POSITIVE INTENTION IN THIS REGARD.
- IT IS NOT YET CLEAR IF IT WILL MAKE SENSE TO BUILD A MAGNETIC FUSION REACTOR IN THE NEAR TERM. OUR SCIENTISTS AND YOURS NEED TO LOOK AT THIS IN MORE DETAIL.
- MOREOVER, IN THE ABSENCE OF A BROAD CONSENSUS, THE COST OF THE PROJECT WILL RISE TO SUCH A LEVEL THAT IT WOULD BE INSUPPORTABLE.
- OUR SCIENCE ADVISORS AND EXPERTS ALSO HAVE MUCH WORK TO DO IN SORTING THROUGH THE SPECIFICS OF A MULTI-LATERAL AGREEMENT AND IN ENSURING THAT CONTRIBUTIONS AND BENEFITS ARE CAREFULLY AND FAIRLY BALANCED.
- STILL, LET US TELL THEM TO BEGIN, AND COMPARE NOTES WHEN WE NEXT MEET.-

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THE WHITE HOUSE

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PAGES 2

FROM

WILLIAM MARTIN

(NAME)

/ Dan Fortier

456-2224

(EXTENSION)

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MESSAGE DESCRIPTION

Berrold Talking Points in
Fusion Research

LOG #:

TO (AGENCY)

DELIVER TO:

DEPT/ROOM NO.

EXTENSION

State

Brunson McKinley (pass to Richard S.
Charles Trustees + Michael Mark)

Defense

Col David Brown (pass to Steve Bryan +
Phil Berman)

Energy

William Vitale (pass to Alvin Trivelp
George Bradley + Joe Salazar)

CIA

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REMARKS

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